November 2, 2012

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RE: October 11th Workshop on Distributed Generation Net Metering

Introduction

The Vote Solar Initiative (Vote Solar) appreciates the opportunity to provide comments on the Minnesota Department of Commerce's (the Department) stakeholder process for distributed generation (DG) net metering. While this represents the first time Vote Solar has submitted formal comments in this process, we have been closely following the stakeholder process since early 2012.

Vote Solar is a non-profit grassroots organization working to combat climate change and foster economic opportunity by bringing solar energy into the mainstream. Since 2002, Vote Solar has engaged in state, local and federal advocacy campaigns to remove regulatory barriers and implement key policies needed to bring solar to scale. We currently have offices in California, Colorado, Pennsylvania and New York.

Vote Solar is particularly focused on rate design issues related to DG solar, including the billing arrangement known as net metering. Recognizing the importance of this policy for supporting customer-sited solar and other renewables energy technologies, we are actively participating in net metering and broader rate design regulatory proceedings in states across the U.S, including: Arizona, California, Colorado, New Mexico, New York and Vermont among others. In Colorado, for example, we have staff participating in Xcel Energy's Technical Review Committee, which oversees the company's current DG solar valuation study.

As a general principle, net metering is one of the most effective policies for supporting customer generation of renewable energy, and is currently enabling customer-sited generation in 43 states and the District of Columbia. The simplicity and understandability of net metering have been pivotal in reducing barriers to consumer uptake of energy technologies such as solar, and is arguably one of most successful market transformation policies for the renewable energy economy. Vote Solar strongly supports the enhancement of Minnesota's net metering rules. As detailed below, we especially encourage the Department to remove the 40kW system size limit.

In addition, Vote Solar strongly supports removing barriers to financing options for DG solar. Over the last year and a half, third-party ownership of DG solar has enabled many more customers to invest in solar, and is a model that is widespread in the most vibrant solar markets in the U.S. As compared to the outright purchase of a solar system, the promise of lower energy bills with little to no upfront payment has spurred tens of thousands of homeowners and businesses, churches and schools to install solar systems through a Power Purchase Agreement (PPA) or lease arrangement. Unfortunately, Minnesotans are currently missing out on these financing models due to lack of clarity in state regulations related to third-party ownership of DG systems.

Recommendations

Vote Solar urges the Department to use its authority to adopt, or propose to the Minnesota legislature, the following changes in order to significantly expand the State's solar energy market and provide greater opportunity for Minnesotans to go solar.

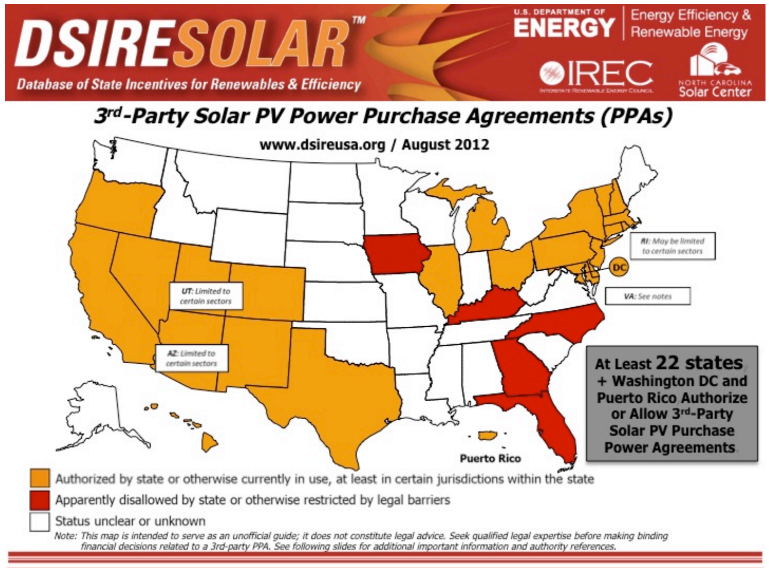
According to the Solar Energy Industry Association (SEIA), at the end of 2011, the U.S. had installed 3,954 megawatts (MW) of Photovoltaic solar (PV), while Minnesota had installed only 4.8 MWs of PV capacity on its grid.[i]. When compared to Minnesota's total electricity consumption of 68.5 million megawatt hours (MWh) in 2011, 4.8 MW of solar PV capacity likely produced approximately 5,000 (MWh) of electricity, or roughly 0.01% of the State's total energy production. While Minnesota has the potential for higher penetrations of DG solar, its current solar energy landscape is severely constrained due to the current state of policies such as net metering and 3rd party ownership financial models. Changes to these policies are essential in order to unleash Minnesota's solar market, while creating quality jobs and fostering investment in economic development throughout the state.

To support the growth of Minnesota's DG solar market, we recommend the following policy changes:

1. **Clarify that third-party ownership of solar energy systems is legal, and that 3rd party owners will not be regulated as utilities.**

Current Minnesota laws are ambiguous regarding third-party ownership of distributed generation systems. Many other states provide customers and developers clear and transparent laws or regulations that specifically allow for third-party ownership. We suggest that the Department consider the rules adopted in at least 22 other states that clearly establish the legality of 3rd party ownership arrangements for solar, and do not result in 3rd party owners being regulated as a utility (e.g. notable examples include Colorado and Nevada).

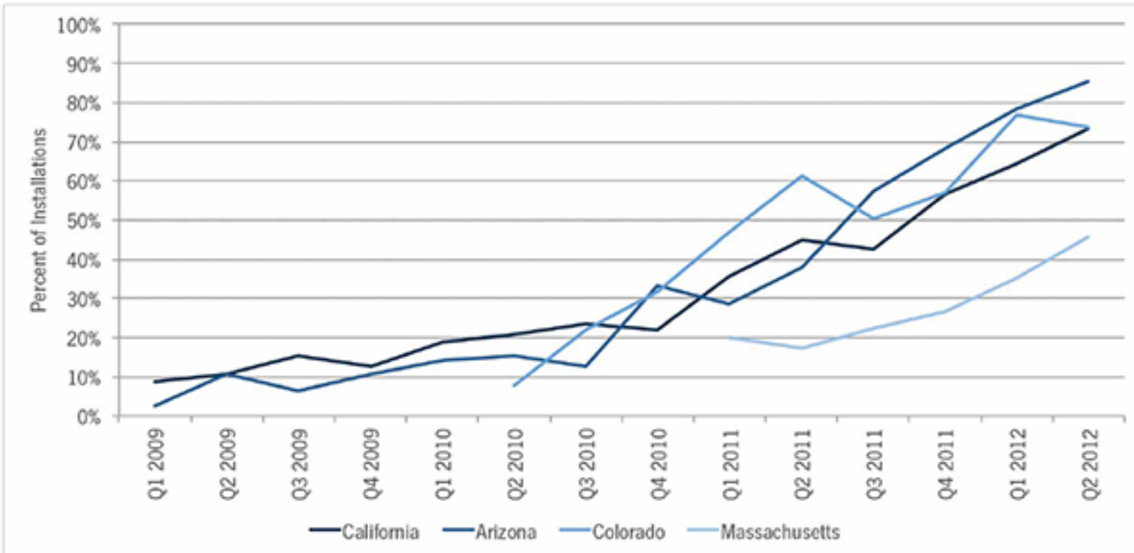
Chart 1: States that allow 3rd Party Ownership of Solar energy Systems[ii]



According to SEIA, the relative market share of third-party-owned systems has grown immensely in established solar markets, due to the benefits these financing arrangements offer to energy consumers. For customers who are interested in a solar investment but lack the necessary capital or sufficient taxable income to fully capture federal tax incentives, the 3rd party ownership model provides a valuable alternative. Third-party ownership models also provide public entities and other non-profits a means of benefiting from solar tax incentives of which would otherwise be unavailable without a third-party arrangement. This model also benefits customers who simply prefer to let a professional assume the responsibilities of solar system ownership.

In the largest residential solar markets of California, Arizona, Colorado and Massachusetts, third-party leases or PPAs comprise upwards of 70% of all new residential solar PV installations in Q2 2012. In other major residential markets such as New Jersey and Hawaii, prominent solar providers suggest that third-party penetration levels are similar to those seen in California and Colorado (70% to 80%).

Chart 2: New residential solar installations financed through PPAs and Leases, Q2 2012



Note: Granular market share percentages as well as third-party/direct-sale installed price comparisons are available in the full version of the U.S. Solar Market Insight report.

2. **Improve net metering rules by increasing the net metering cap and system size limitations.**

The existing net metering system size limitation of 40kW is currently among the lowest in the nation. Vote Solar therefore recommends that the Department support replacing the current system size cap with the standard used in Colorado, where the system size cap is set at 120% of a customer's average annual electricity consumption. We further recommend that the Department consider the Freeing the Grid website at www.freeingthegrid.org, populated and managed by Vote Solar and the Interstate Renewable Energy Council, where states are scored each year from A-F based on their net metering policies. Predominately due to Minnesota's current system size limitation for net metering, the state currently maintains a **C grade** according to this recognized ranking system.

3. **Allow for meter aggregation under net metering rules.**

Minnesota rules should also allow for meter aggregation, where a single customer (usually a school or business) with electrical load across several contiguous or nearby properties the ability to aggregate their load for the purpose of determining net metering system size. This practice will streamline the number of transactions for the utility, as well as allow schools and businesses to fully take advantage of their buildings' solar resource.

4. **Identify the benefits of distributed generation and identify what, if any, cross rate class subsidization issues may exist as a result of distributed generation facilities.**

Given the utilities reticence to see the expansion of net metering, due to their concerns over the cost of net metering and potential cross subsidization issues voiced during the October 11th meeting, we recommend that the Department move expeditiously and commission a 3rd party consultant to undertake a Minnesota specific study that properly identifies the benefits and costs resulting from DG solar.

Numerous studies across the country have evaluated the overall costs and benefits to ratepayers resulting from increased penetration of net metering or distributed generation. In particular, these studies take into consideration the value of the solar energy exported to the grid based upon the marginal costs of the displaced energy, the avoided capital cost of installing new power generation due to the added capacity value of the solar PV systems, transmission and distribution expense and line loss savings associated with the systems, and in some cases, environmental benefits.

The results of the most prominent of these studies (RW Beck's 2009 study for APS, Austin Energy's 2012 solar value study, and Crossborder Energy's 2012 study of net metering in PG&E territory in California) **clearly demonstrate that the increased development of DG solar and use of net metering result in net benefits to the entire electricity rate base.**

A helpful starting point for understanding how various studies consider these issues is the Solar America Board for Codes and Standards report released earlier this year entitled, "A Generalized Approach to Assessing the Rate Impacts of Net Energy Metering".[iii] Importantly, the report reviews and synthesizes three studies performed for major utilities in Arizona, California, and Texas. While the analysis and results of the studies are utility specific, the methodology is easily generalized and has informed the review of distributed solar resources elsewhere. **The chart below details the categories of benefits and costs that a net metering analysis must include.** The Appendix of these comments offers the Department more detailed information on several of the most comprehensive studies completed to date on this important topic.

Chart 3: Solar ABC's Report List of Costs and Benefits Associated with a Net Metering Program

Benefits to the Utility	Costs to the Utility
Avoided Energy Purchases (inc/fuel)	NEM Bill Credits
Avoided T&D line losses	Program Administration
Avoided Capacity Purchases	
Avoided T&D Investments and O&M	
Environmental Benefits – NO_x, SO_x, PM, & CO_2	
Natural Gas Market Price Impacts	
Avoided RPS Generation Purchases	
Reliability Benefits	

Conclusion

We look forward to engaging further in this important discussion, and always remain available to answer questions the Department staff may have regarding our written comments. We hope that this process results in a near term proposal that will meet stakeholder needs and desires while simultaneously allowing Minnesota's DG solar market to mature. Vote Solar thanks the Department for the opportunity to present our perspective, and looks forward to working with the Department and other stakeholders, including Xcel Energy, in removing barriers to the development of DG solar resources in Minnesota.

Respectfully submitted this 2nd of November 2012.

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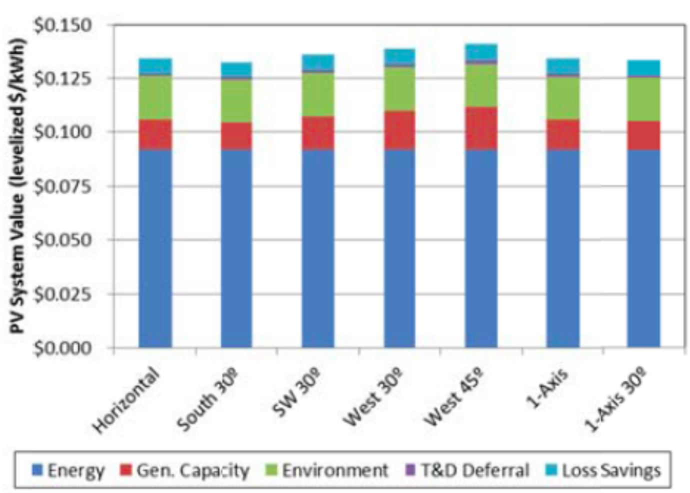
Appendix 1
Cost and Benefit Evaluation of Net Metering and DG Solar

To help the Department synthesize the results of the most thorough DG solar valuation studies, we present a summary of the findings from the most recent Texas, Arizona and California studies:

1) **Texas -** The Value of Distributed Photovoltaics to Austin Energy and the City of Austin (Hoff et al., 2006, followed by a 2008 revision and a 2012 revision).[iv]
2) **Arizona -** Distributed Renewable Energy Operating Impacts and Valuation Study (R.W. Beck, Inc., 2009).[v]
3) **California-** The third comprehensive solar energy valuation study was part of a broader review of the costs and benefits of net metering for California's largest IOUs, culminating the in issuance of Decision D.09-08-026.[vi] The study was updated in 2012 by Crossborder Energy.

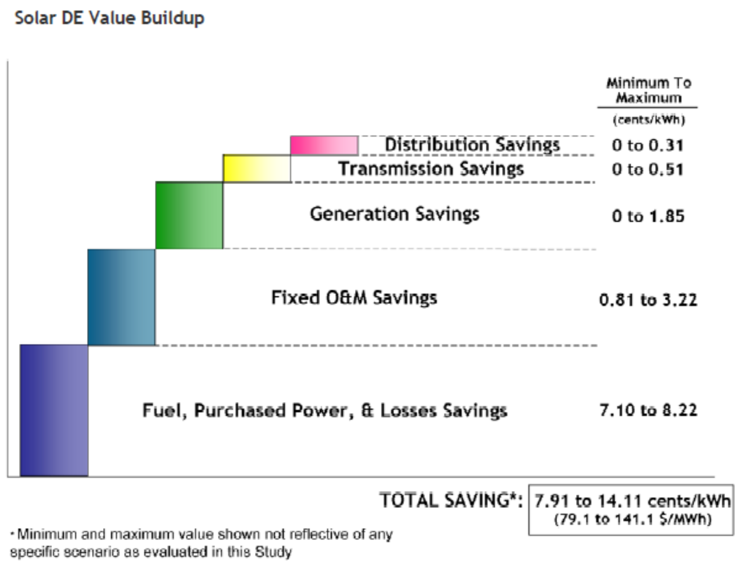
<u>Texas</u>
Austin Energy recently developed a "Value of Solar Tariff" (VOST) based upon the 2006 study by Hoff, et al., which segregates the benefits of residential customer-sited solar generation systems from the retail rate. Thus, the residential customer continues paying the fully loaded retail rate for its consumption, while it receives payment for its solar generation separately under the VOST. The value of solar was originally determined in the 2006 study for a variety of differing system configurations. Each year these values are updated and in 2012 formed the basis for the VOST. The value for DG solar in 2012 is presented below.

Chart 1: Austin Energy VOST - PV Value Results by Component and Configuration



<u>Arizona</u>
The RW Beck study commissioned by APS and the Commission in 2009 was a participatory process resulting in the following estimated benefits.

Chart 2: Solar DG Value Buildup in RW Back's APS DG Valuation Study



California

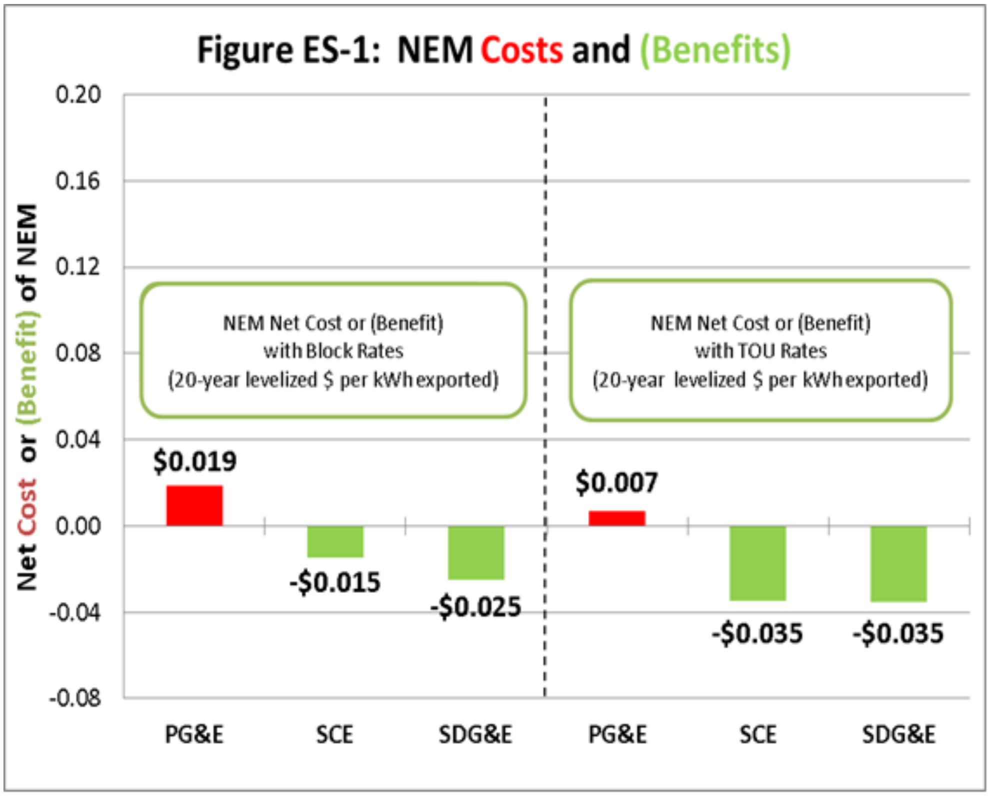
The third study was performed by Energy & Environmental Economics, Inc., otherwise known as E3, for the California PUC staff. However, more than two years have passed since the last analysis of the costs and benefits of net energy metering (NEM) across the three large California investor-owned utilities (IOUs). Since then, much has changed, including significant changes to residential rate structures, a lower expected trajectory for future rate escalation, and new perspectives on the benefits of the renewable generation which net-metered solar systems export to the grid. California utilities assert that NEM creates a significant cost shift from NEM customers to other ratepayers, but have presented little new data to support this claim.

Vote Solar funded Crossborder Energy to estimate NEM costs and benefits across the three IOUs, using the same approach that the CPUC used in 2009, but with updated assumptions, current rate structures, and the most recent avoided cost model of the benefits of NEM generation exported to the grid. This memo presents results for the residential sector. A further analysis that includes commercial sector results will follow in the near future.

Key Study Findings

The results of Crossborder Energy's analysis refute utility claims that that NEM is a cost shift that significantly raises rates for non-participating residential customers. As discussed in more detail below, the analysis determined that the cost-effectiveness of NEM in the IOUs' residential markets has improved significantly since the prior CPUC and LBNL NEM studies, to the point that residential NEM is now cost effective on average in the California IOUs' service territories.

Chart 4: Key Findings in the Crossborder Energy 2012 Evaluation of Residential Net Metering in California



1) On average across the three large CA IOUs, NEM does not impose costs, and in fact creates a small net benefit, for non-participating residential ratepayers. Residential NEM customers in PG&E's territory under today's increasing block rates impose a small cost on other ratepayers, as a result of PG&E's relatively higher upper tier rates and lower avoided costs[vii]; however, this small cost is offset by the net benefits in the SCE and SDG&E residential markets, where upper tier rates are lower and the costs avoided by NEM generation are higher. Overall, assuming no changes in rate design, the net annual benefits of NEM for the non-participating residential customers of the IOUs will be $3 million per year when the current 5% limit on the capacity of NEM systems is reached. When this 5% cap is reached, the number and capacity of NEM systems installed statewide will be approximately four times as many as today.

2) ***Any costs from NEM for non-participating customers are not fundamentally a problem with NEM, but instead are a function of individual utility rate design.*** Modifications to residential rates will result in an increase in the net benefits to non-participating ratepayers from NEM. For example, if all IOU residential customers were to move to the IOUs' current residential TOU rates, the net residential benefits of NEM when the 5% NEM cap is reached would increase from $3 million per year to $21 million per year. Such rate design changes make sense for many other reasons, including more closely aligning rates with costs and signaling to customers when reductions in consumption are most valuable or increases in usage are most economic.

3) Any ratepayer costs or benefits associated with a NEM program are extremely small in the context of utility budgets, and of other public benefit charges that residential customers already pay. The three large California IOUs' collective annual electric revenues were $25 billion in

2011, meaning that the impact of NEM is only a few cents per month in either direction on the average residential ratepayer's utility bill. The Crossborder analysis includes several sensitivities which show how the results change when important assumptions are modified; the monthly bill impact for the average residential customer from the sensitivity that results in the largest increase in NEM net costs (assuming a reduced premium for the renewable NEM generation exported to the grid) is $0.45 per month for PG&E, $0.18 per month for SCE, and $0.07 per month for SDG&E at the 5% NEM cap; these net costs would decrease by approximately half if residential customers moved to TOU rates.

In addition to the information provide above on three specific studies, the Department may find the State of Vermont's ongoing effort to evaluate net metering useful. Below is a chart compiled by the Vermont Public Service Department assessing the scope of benefits and costs evaluated in all U.S. studies on net metering[viii]